

EXCITATION OF ENERGY LEVELS OF FISSILE NUCLEUS SHAPE ISOMERS IN THE DOORWAY-STATE IN REACTIONS WITH NEUTRONS AND DEUTERONS

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In measurements of fission neutrons yields in direction of fission fragments motion in (d,pf) reactions at certain excitation energies threshold neutrons were detected [1]. Comparison of this data on neutron yields in $^{233}\text{U}(\text{d,pfn})$ and $^{239}\text{Pu}(\text{d,pfn})$ [2] reactions with dependence of average number of fission neutrons $\nu_p(E_n)$ in $^{233}\text{U}(\text{n,f})$ reaction and dependence of nuclear fissionabilities in $^{235}\text{U}(\text{d,pf})$ and $^{239}\text{Pu}(\text{d,pf})$ reactions on the excitation energy made it possible to form more clear pictures of the process of nuclear fission in (d,pf) reaction. Thus, subbarrier fission resonances in reactions $^{233}\text{U}(\text{d,pf})$, $^{235}\text{U}(\text{d,pf})$ and $^{239}\text{Pu}(\text{d,pf})$ [3] are conditioned not by vibrational states, but resonance excitation of low rotational states in the second well (shape isomer energy levels), that occurs at deuteron break-up in Coulomb nuclear field, and by interaction between a produced neutron and a primary nucleus in the doorway state.

References

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